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Why Consumers Engage in Virtual New Product Developments Initiated by Producers

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ABSTRACT

In this article, I investigate why consumers engage in virtual new product developments initiated by producers. Drawing on motivation research found in related fields such as leisure, online communities, user innovation, and survey participation several intrinsic and extrinsic motives can be identified that may induce consumers' engagement. In this empirical study, 825 consumers participating in a virtual development project were asked about their motivations. Six motivational factors could be extracted. Intrinsic interest in the innovation activity and curiosity are found to be the most important motives for consumers' willingness to engage in further virtual development activities.

INTRODUCTION

From a producer's perspective the obtained benefits of virtual consumer integration such as risk reduction, identification of upcoming trends, or increased number of creative ideas seem to be obvious, but, why should consumers engage in virtual new product development (NPD) projects initiated by producers and share their ideas and know-how with them? What are their benefits? Up till now, no empirical data is available for this emerging field of research. In this article, I shall investigate why consumers engage in virtual new product developments initiated by producers and spend considerable time and effort actively contributing to a producer's new product development process. First, I shall give an overview of the concept of virtual consumer integration into NPD. Second, a theoretical review is provided on relevant motives inducing consumers to engage in virtual NPD. Following, the design and conduction of the empirical study is introduced, before I present the empirical results. Finally, the findings will be discussed and possible implications outlined. The results show, that rather the participation itself than the outcome of the virtual NPD—the new product—is considered as a rewarding experience, from which consumers derive benefit.

VIRTUAL CONSUMER INTEGRATION

These days, consumption becomes more fragmented and idiosyncratic (Holt 2002). This means that it is no longer possible to treat consumers at arm's length or as peripherally-related topics (Firat and Venkatesh 1995). More active consumers ask for more, but on the other hand offer new possibilities as they are more literate and willing to produce by themselves (Firat and Venkatesh 1995; Hemetsberger and Pieters 2001). Highly innovative and skilled consumers can be encountered in online communities (Kozinets 2002; McAlexander et al. 2002). For example, at *niketalk.com*, an online community for devoted basketball players, new basketball shoes are developed by users. The new designs are discussed, evaluated and improved within the community. Among others, Bagozzi and Dholakia (2002) point out that online communities present an aggregation of collective expertise that is difficult to match elsewhere. Researchers like consultants agree upon the enormous potential of online communities for new product development (Pralhad and Ramaswamy 2004; Urban and Hauser 2004).

In addition, the Internet offers new simplified modes to virtually integrate large numbers of former anonymous consumers into a producer's innovation process (Urban and Hauser 2004; von Hippel and Katz 2002). Recently, Dahan and Hauser (2002) introduced six web-based methods that facilitate the interaction between producers and consumers during new product development.

The novelty of virtual consumer integration, compared to traditional online market research is that consumers are not only asked about their opinions, wants and needs, but also to contribute their creativity and problem solving skills (Lilien et al. 2002). Consumers are invited to actively participate in the creation of new products by generating and evaluating new product ideas, elaborating a detailed product concept, evaluating or challenging it, discussing and improving optional solution details, selecting or individualizing the preferred virtual prototype, testing and experiencing the new product features by running simulations, getting information about the new product or just consuming it. Web-based tools enable the dialogue and allow the virtual transfer of consumers' explicit and implicit knowledge.

The Procter and Gamble Advisory Community, for example, illustrates, how consumers virtually contribute to innovation activities along the entire innovation process, even more than once. Consumers participate in designing, testing and launching new products such as shampoos, baby care, snacks, healthcare, and pet nutrition. This and several examples of other consumer goods firms such as Audi, Henkel, Lego, Ducati, Sony, or Swarovski (e.g. Füller et al. 2004; Verona and Prandelli 2002) demonstrate the potential of this new approach of co-creation.

However, virtual consumer integration only works, when qualified consumers are willing to participate. They have to be motivated to contribute their know-how, share their ideas and honestly state their preferences. In contrast to open source software and user innovation, consumers participating in virtual new product developments will hardly ever be able to benefit immediately from using "their" innovation. A producer of mass produced consumer goods like cars, mobile phones, TVs, or skies is able to consider only a few consumer ideas for modification or entirely new products. In addition, the products consumers contributed to, most of the time, will be available on the market with at least a 6-12 month delay. Due to this situation, it can be assumed that motivations for participating in virtual NPD slightly differ from open source software and lead user developments. The question arises: what motivates numerous consumers to engage in virtual new product developments initiated by producers?

MOTIVES FOR CONSUMER PARTICIPATION

According to social exchange theory, the reason why consumers virtually interact with producers and engage in virtual new product development is because they expect that doing so will be rewarding (Emerson 1981). An interaction is considered as being rewarding if the subjective derived benefit is greater than the experienced effort. While social exchange theory describes basic circumstances under which consumers virtually engage in new product development, it does not provide what Emerson calls a theory of values (Emerson 1987). However, whether or not a consumer engages in virtual new product development depends on the individual's motivational state, their need to receive and capacity to give (Hirschman 1987, 99).

Consumers may engage in virtual interaction because they show a certain interest for it. It is either the task itself—a playful, challenging experience—or the consequence linked to the engagement, such as recognition, a better available product, or receipt of offered incentive, what motivates them to participate. The reasons why consumers undergo virtual NPD may be manifold and originate from different sets of motives. According to Deci and Ryan,

engaging in activities and tasks can be considered as a function of intrinsic motivation and self-determined extrinsic motivation (Deci and Ryan 2002; Deci and Ryan 1985). Intrinsic motives in combination with extrinsic motives may play a role for consumers engaging in virtual NPD initiated by producers. In the following, the distinction between intrinsic and extrinsic motives will be used to discuss possible factors influencing consumers when engaging in virtual NPD.

Intrinsic Motivation

Hobbies like playing chess, dancing salsa, rock climbing, or gardening are considered as playful, interesting, challenging, and exciting activities often executed as a means of an end (Deci and Ryan 1985). Individuals intrinsically motivated may consider their virtual contribution to new product development as playful and enjoying and therefore perceive it as rewarding instead of pure effort. It is not the outcome but the activity itself, creative consumers may derive benefit from. Such individuals show a positive attitude towards and are interested in virtual new product development activities. Intrinsic motivation can be noticed as interest, involvement, curiosity, satisfaction, or positive challenge (Amabile 1996). Individuals who enjoy their participation may sink in a state of flow—an optimal experience where they get totally absorbed by the activity, losing any sense of time and space (Csikszentmihalyi 2002). Under conditions of deep involvement, freedom, self-control, attention, challenge, sense of mastery, competence and task enjoyment consumers may easiest experience flow (Csikszentmihalyi 2002).

The reason for intrinsic motivation is an individual's very own need for feeling competent and self-determining in dealing with his or her environment (Deci and Ryan 1985). For example, programmers report feeling competent, satisfied and fulfilled when they write code for open source software (Lakhani and Wolf 2003). Hofman and Novak (2000), as well as Mathwick and Rigdon (2004) notice that consumers experience flow on the Internet. In general, cognitively engaging oneself in creative tasks is considered as being intrinsically interesting (Amabile 1996). Hence, the process of generating new concepts, assessing new innovations, or designing new products may trigger virtual participation, rather than the outcome of NPD.

Extrinsic Motivation

Consumers are extrinsically motivated, if they focus on contingent outcomes that are separable from the activity per se (Deci and Ryan 2002). Deci and Ryan distinguish between 'informational' and 'controlling' extrinsic motivators, depending on its effect on intrinsic motivation. 'Informational' extrinsic motivators that increase someone's sense of competence, need for finding a creative solution, or prevailing task involvement are considered as additional bonus and activity encouraging, reinforcing someone's intrinsic motivation, while 'controlling' extrinsic motivators like status, or job promotion confine self-determination and are considered as counterproductive as they undermine initial intrinsic motivation (Deci and Ryan 2002; Deci and Ryan 1985).

In the case of virtual consumer integration, appropriate rewards will either animate already participating consumers to make even better contributions, or attract additional consumers interested in the topic, but with so far too low motivation levels to engage in virtual NPD. The danger hereby is first, that consumers, not interested in the topic at all, suddenly participate in virtual NPD because they are looking for the incentive, but do not make serious contributions. Second, consumers that initially considered virtual NPD as playful, rewarding activity, suddenly may start to hide their

ideas, thinking they can gain some economic benefit by selling them, or they may feel misused by producers because the offered extrinsic incentives, by far do not present a proper compensation for the contributions made. The individual's perceived locus of causality shifts from internal to external (DeCharms 1968). Free riding may be the consequence.

Motives for Virtual Consumer Engagement

Drawing on the rich body of motivation research found in related fields such as leisure (Unger and Kernan 1983), online communities mainly open source software (OSS) (Hemetsberger 2001; Hennig-Thurau et al. 2004), user innovation (Franke and Shah 2003), and survey participation (Groves et al. 2000; MacElroy and Gray 2003) various intrinsic and extrinsic motives can be found to explain why consumers may engage in virtual NPD initiated by producers.

Autotelic/ Playful Task (AT): Individuals engage in tasks because the activity itself is considered as rewarding. Consumers involved in innovation tasks (Mittal 1995) of a certain product category (Bloch 1986), or brand (Coulter et al. 2003; Mittal and Lee 1988) may engage in virtual product developments. According to Belk et al. (2000), such tasks may offer a state of 'jouissance' people try to maintain.

Curiosity-Exploration-Arousal Seeking (CU): Curiosity may be defined as the desire for knowledge because of intrinsic reasons (Berlyne 1960). People gain intrinsic satisfaction from relieving curiosity (Unger and Kernan 1983). A distinction can be made between specific and diverse curiosity motivated behavior (Berlyne 1960). The former refers to the exploration of a single stimulus while the latter represents a tendency to seek stimulation from a variety of sources. Consumers may engage in virtual new product development just because they are curious, or because they want to escape boredom.

Achievement-Challenge-Self Efficacy (SE): The opportunity to prove someone's self efficacy, drives consumers to innovate on the Internet (Kollock and Smith 1988). Consumers that are optimistic about their capabilities to solve a certain task and cope with anticipated difficulties may perceive the activity as a challenge to be mastered. Consumers, just like "Hackers" (Lakhani and Wolf 2003) may be proud of their contributions.

Skill Development-Knowledge Acquisition (SD): People are motivated to perform an activity because they are striving to improve their skills and gain additional knowledge (Amabile 1996; Csikszentmihalyi 2002). Innovative users get in contact with their friends, peer group members, and producers because they look for complimentary knowledge and professional support, needed to advance their own ideas (von Hippel 2002). Engaging in virtual new product development may enable consumers to learn more about new technologies and products.

Information Seeking (IS): Prior studies show that people participate in online communities because they are looking for information relevant to them (Galegher et al. 1998). According to Butler et al. (2002), online communities offer a possibility to gain access to otherwise obscure or inaccessible information. Consumers may engage in virtual new product development because they are seeking for innovation or product related information.

Recognition-Visibility (V): Consumers may participate in virtual new product development to become visible and get recognition from other participants as well as from the producer. Online community members share their know-how and participate in activities connected to effort for ego gratification motives, fame, and reputation (Hennig-Thurau et al. 2004). Further, consumers derive benefits from building up direct relationships with compa-

nies due to special treatment, offered self-esteem, and reduction of uncertainty (Gwinner et al. 1998). Strong brands provide additional benefits, as they are relevant for consumers' self identity creation (Fournier 1998) and serve as a means to express someone's individual lifestyle (Coulter et al. 2003). Engaging in virtual product developments may enable consumers to become visible and known as (co-) innovator beyond their local boundaries.

Altruism-Community Support (A): Altruism can be defined as "doing something for another at some cost to oneself" (Ozinga 1999 p.5). A lively debate is going on as how to define altruism (Takahashi 2000). Without going into the definitions in more detail, altruism may motivate consumer to engage in virtual NPD (Hennig-Thurau et al. 2004).

Make Friends (MF): Beneath the interest for the topic, the possibility to get in contact with like-minded people is a main reason why consumers engage in virtual communities (Kozinets 2002). Moreover, Gwinner et al. (1998, p.104) point out that consumers interacting with companies interpret their relationship with employees as being similar to friendship. This is illustrated by the customer statement "he's like a kind of friend now". Getting in touch with like-minded people—employees and consumers, may be a reason for consumers to participate in virtual NPD.

Personal Need-Dissatisfaction (D): Sports enthusiasts start to modify or develop their own products because they derive benefit from using their innovation (Franke and Shah 2003). Such lead users develop their own products because they are dissatisfied with existing products available on the market and because they expect attractive innovation-related benefits from a solution to their leading-edge needs (von Hippel 2002). Personal need may motivate consumers to virtually engage in new product developments despite limited influence on the final design.

Compensation-Monetary Reward (CO): Immediate as well as delayed payoffs may be the reason why consumers engage in innovation activities (Lerner and Tirole 2000). Consumers engaging in virtual NPD may be interested in the offered monetary incentives such as give-aways, bonus points, prize drawings or monetary compensations delivering immediate benefit. The more time and effort consumers invest, the stronger will be their need for monetary compensation (von Hippel 2002). While monetary incentives may be detrimental for creativity (Amabile 1996), no negative effects on survey response quality have been found (Singer et al. 1999).

EMPIRICAL STUDY

Research Field

The following empirical study was conducted to examine why consumers engage in virtual NPD initiated by producers. Consumers that had actually participated in at least one virtual NPD project were asked about their motivations for participating in virtual NPD projects. Table 1 summarizes 10 virtual NPD projects considered in this study.

For example, Swarovski, the Austrian based market leader for crystal products, initiated a crystal tattoo design competition, inviting consumers to create crystal tattoos, a new generation of "body jewelry" which can be directly applied on skin. An internet-based toolkit see Figure 1 enabled 'fashionistas' to design their own crystal tattoos. In total, more than 6,000 consumers engaged in these projects and made valuable contributions. Further, on average, 77 % of the participants expressed strong interest in participating in further virtual innovation activities. What motivates consumers to do so?

Study Design

An online survey was used for data collection. Based on an extensive literature review, measurement items for all above described potential motives have been identified. Those measurement items have been applied in motivation studies of related fields (Butler et al. 2002; Constant et al. 1996; Unger and Kernan 1983), and were used directly or slightly modified for this study. Interviews with consumers that already participated in virtual NPD, as well as discussions with 5 experts in the field of virtual consumer integration were carried out to complete the initial questionnaire.

In total, the questionnaire contained 24 motive items anchored by (1) "strongly disagree" and (5) "strongly agree". After an online pre-test with 25 participants and subsequent telephone interviews with the participants, data collection with the final, adjusted questionnaire was conducted within 3 weeks in October 2003. 4,714 emails with a link to the online questionnaire were sent, whereof 1,390 emails were undeliverable. The email addresses were obtained from consumers that previously participated in virtual NPD projects and agreed to be contacted in the future. In total 3,320 consumers were reached, and 825 complete questionnaires returned. This corresponds to a response rate of 24,8%. As some projects had been dated back more than one year, I provided consumers with a short visual and verbal overview of the project they were attending to refresh their memory. 727 consumers were included in the further analysis, as they stated that they were able to remember their participation in detail (value ≥ 3) questioned on a 5-point scale anchored by (1) "I can not remember at all" and (5) "I can remember in great detail". To test possible none-response effects as described by Armstrong and Overton (1977), first, early and late respondents (first 3rd vs. last 3rd) were compared and, second, age, gender, and education already measured at the conducted virtual NPD project were compared between respondents and non-respondents. No significant differences were recognized. 53% of the participants were male, 47% female. On average, participants were 35.06 years old and well educated. 30.1 % hold a college degree, 37.9% even hold a post graduate degree. Almost half of the participants (N=354; 42.9 %) reported that they already had an idea for a new product or product modification. But, only a handful of consumers (N= 46; 5.6 %) actually realized their ideas, and only 48 consumers (5.8 %) tried to sell their product ideas.

RESULTS

Table 2 gives an overview of all 24 identified motive items.

Principal component analysis with varimax rotation was performed on the 24 items. Varimax was chosen to identify uncorrelated factors that are independent from each other. Using the scree test criterion a six factor solution was extracted. The scree test criterion was used first, because low communalities (< 0.50) suggested to abolish apparently important motive items like consumers' curiosity when applying Kaisers' eigenvalue-one criteria, and second, for factor analysis with less than 20 remaining items, as was the case in this study, the latent root criterion has the tendency to extract too few factors (Hair et al. 1998). All items with low factor loadings (< 0.5) or with high cross loadings (> 0.35) (Hair et al. 1998), not displaying an important single item, were eliminated. Based on these criteria 12 of the 24 items were deleted. Using Kaiser-Meyer-Olkin (KMO) measure for sampling adequacy (KMO=.787) and Bartlett's test of sphericity ($p=0.000$) indicated appropriate application of factor analysis. Coefficient alpha and split-half testing was used to test reliability of factor scores. Table 3 presents the final factor solution and contains factor loadings, explained variance along with item-total correlations, and α 's as far as available. In

TABLE 1
Consumers Virtually Participating in Following Development Projects

Project/ Study Participants	Project Description
Running/ Basketball Shoes (N=43)	Consumers from different running and basketball communities participated in the development of a modular and adjustable running and basketball shoe concept.
Furniture (N=27)	Readers of online interior design and lifestyle magazines like www.wallpaper.com designed their own modular furniture system in classic design.
Model Railroads (N=85)	Model railroading enthusiasts encountered on communities like www.miba.de and www.dampf-plus.de helped to customize innovative model railroading products according to their needs and to get ideas how to extend the producers product portfolio.
Public City Shiners (N=23)	Citizens of Munich, Germany supported design students to come up with new innovate shiners for the city. The design students modified their concepts according to the participants input. Munich residents became aware of the project via articles in newspapers like "Süddeutsche Zeitung"
Baby Carriage (N=272)	Young parents, frequenting the www.eltern.de community participated in the individualization of a new multifunctional baby carriage.
Mobile Phones for Kids (N=14)	Parents assessed new mobile communication ideas to interact with their children.
Towels and Bedclothes (N=50)	Housewives, visiting the website of Vossen, a famous towel brand in Austria, were invited to participate in a design testing of five different towel collections and taking part in the creation of new bedclothes.
Crystal Tattoo (N=43)	'Fashionistas' visiting sites like www.fashion.net created their own CrystalTattoos. The Swarovski design team got inspired by the creative contributions.
Infotainment Systems in Cars (N=259)	Car enthusiasts and fans of Audi designed their own future infotainment systems. A link on the Audi webpage called consumers attention to participate in the development.
Snowboard Backpack (N=9)	Members of snowboard and backcountry communities like epicski.com , forum.powdermag.com , and www.telemarktalk.com made valuable contributions to develop a multifunctional backpack with integrated avalanche shovel and back protection.

addition, confirmatory factor analysis (CFA) on the hold out sample was used to validate the factor structure of the measurement sample. The overall fit measures of the CFA suggest a good fit for the data ($\chi^2=103.66$ with 39 df; CFI=0.961; GFI=0.957; AGFI=0.913; RMSEA=0.067), and help to cross-validate the model. The final factor structure was also validated for every single project showing an adequate sample size.

As the factor analysis shows, consumers may engage in virtual new product developments, for several reasons: a) curiosity, b) dissatisfaction with existing products, c) intrinsic interest in innovation, d) to gain knowledge, e) to show ideas, or f) to get monetary rewards. The results of the factor analysis are conform with the previous theoretic considerations. Regression analysis was conducted to determine the importance of the different motives. Consumers' interest in further participations and participation frequency served as dependent variables. Table 4 shows the results of multiple regression analysis. As the study consists of 10 NP

projects, leave-one-project-out analysis, for projects with $n \geq 40$, was applied to investigate the potential bias of one particular project on the overall results (cf. Chakraborty et al. 2002). All regressions delivered basically the same pattern of results i.e. significance levels, overall explained variance, direction, as well as importance of beta-coefficients.

As the highly significant results show, 'intrinsic innovation interest', 'curiosity', and 'showing ideas' are main drivers for consumers to engage in future virtual product developments. While 'monetary rewards' have a negative impact on further participation interest, they are positively related to participation frequency. Monetary compensation becomes important for consumers willing to spend more time and effort. Virtual engagement may be considered as a kind of work. On the contrary, 'curiosity' and 'show ideas' motivate to participate, but do not create endurance. As consumers' engagement is voluntary, interest in the task is the most necessary prerequisite.

FIGURE 1
Swarovski Crystal Tattoo Design Competition



TABLE 2
24 Motive Items Ordered According to Strength of Participants' Agreement

Motives Described	What are the reasons for you to participate in virtual product developments via the Internet?	Mean	SD
CU	Just because I am curious.	4.24	.91
IS	To keep up with new ideas and innovations.	4.20	.87
AT	Because I enjoy dealing with new products.	4.16	.88
CU	To experience new and different things.	4.12	.86
AT	For me, co-developing is rewarding.	3.89	1.06
A	Because I want to support new product innovations.	3.79	1.06
D	Because I would highly benefit from a new product.	3.77	1.14
SD	To gain new knowledge/ expertise.	3.70	1.05
A	To help inventors (producers) solve their problems.	3.60	1.03
MF	Because I want to meet others who share similar interests.	3.46	1.13
D	Because I am dissatisfied with existing products.	3.22	1.15
SE	To test my capabilities.	3.17	1.25
V	Because I have ideas that I want to introduce to producers	3.09	1.22
V	To make others aware of my knowledge and ideas.	3.07	1.26
SD	To improve my skills.	2.94	1.20
CO	Because I am interested in the offered reward (price drawing, competition,...).	2.72	1.32
SE	To gain a sense of accomplishment.	2.68	1.16
A	Because I was asked to do it.	2.68	1.36
V	Because I want to get in touch with producers.	2.56	1.23
CO	Because I hope to get a monetary compensation.	2.20	1.21
CO	Because I expect a compensation in return.	2.17	1.18
CO	To get a future support myself.	2.06	1.10
CO	Because I want to get paid for it.	1.95	1.11
V	To become known as co-inventor.	1.77	1.04

N=727

TABLE 3
Summary of Exploratory Factor Analysis and Scale Reliability

	Mean	Factor Loading	Explained Var. (%)	Item-Total Corr.	Alpha (α)
Compensation/ Monetary Rewards	2.11		22.03		0.91
Because I hope to get a monetary compensation.	2.20	0.92		0.83	
Because I want to get paid for it.	1.95	0.91		0.84	
Because I expect a compensation in return.	2.17	0.88		.81	
Show Ideas	2.47		15.39		0.71
Because I have ideas I want to introduce to producers.	3.09	0.78		0.52	
Because I want to get in touch with producers.	2.56	0.77		0.50	
To become known as co-inventor.	1.77	0.65		0.55	
Gain Knowledge	3.06		13.86		0.71
To improve my skills.	2.94	0.86		-	
To test my capabilities.	3.17	0.87		-	
Intrinsic Innovation Interest	4.18		13.39		0.75
Because I enjoy dealing with new products.	4.16	0.87		-	
To keep up with new ideas and innovations.	4.20	0.86		-	
Dissatisfaction	3.22		8.66		-
Because I am dissatisfied with existing products.	3.22	0.96		-	
Curiosity	4.24		8.29		-
Just because I am curious.	4.24	0.98		-	
N=727 Total			81.62		

TABLE 4
Summary of Regression Analysis: Willingness for Further Participation and Participation Frequency

Independent Variables	Dependent Variables	
	Show Interest in Further Participation ¹ (Std. Beta)	Future Participation Frequency ² (Std. Beta)
Factor 1: Monetary Rewards	-.095 **	.213 **
Factor 2: Show Ideas	.107 **	.045
Factor 3: Gain Knowledge	.005	-.131
Factor 4: Intrinsic Innovation Interest	.399 ***	.329 ***
Factor 5: Dissatisfaction	-.009	-.142 *
Factor 6: Curiosity	.274 ***	.062
R ²	.330	.148
F	59.177 ***	6.127 ***

* p<0.05

** p<0.01

*** p<0.001

1: single item anchored by (1) "strongly disagree" and (5) "strongly agree".

2: single item (1) once a year, (2) once per quarter, (3) once per month, (4) once per week, (5) 2-3 days per week

DISCUSSION AND IMPLICATIONS

In contrast to open source communities and user innovations, where members engage in innovation tasks because they can benefit from using their innovation, consumers engage in virtual new product developments mainly because they consider the engagement as a rewarding experience. As virtual engagement of consumers is less intentional and planned, it may be considered as less 'professional' and persistent. However, considering consumers innovation capabilities, illustrated by their previous innovation activities, and their stated willingness for further engagement, they offer a promising source of innovation. While monetary rewards are important for people to participate in surveys, or consumers that articulate their experiences on opinion platforms, as far as virtual new product developments are concerned, they only seem to attract a certain type of consumer. The main challenge of virtual consumer integration may be to create a compelling innovation experience. Only, if virtual integration is experienced as a spectacle, may it become a marketable, consumable product itself (Firat and Venkatesh 1995) attracting consumers to contribute on a continuous basis. Researchers developing new tools and methods for virtual integration, as well as innovation managers intending to integrate consumer into their innovation process may find some hints as to how they should design the virtual interaction in order to meet consumers' expectations. As this study covers different projects that were pursuing divers goals and applying various interaction tools in different product categories, process stages, innovation activities, and levels of innovativeness, the findings should be broadly applicable for current virtual innovation projects in consumer markets. However, the study also comes up with many, so far unanswered, questions such as: How do consumer characteristics affect their motivation for participation? What is the effect of different consumer motives on the creativity, quality and quantity of their contributions? Further, it is interesting to know what the consequences of consumers participation experience are. Does it evoke consumers' interest for the virtual new product? Those, and further questions may be addressed by future research investigating how to use the innovative potential of consumers encountered in online communities.

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